REMARKS

This is a timely filed Response to the Office Action of 06/09/2005. Claims 1-7 and 14-19 were pending at the time of the Office Action after election with traverse responsive to the restriction requirement of February 10, 2005. All claims were rejected. In this reply Claims 1 and 14 have been amended to incorporate features of dependent claims 2 and 3 and dependent claim 15, respectively. Claims 2, 3, and 15 have been withdrawn.

Claims 1-2, 4-5, 7, 14,16-17 and 19 were rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. The Examiner states:

"Nakamura et al. explicitly disclosed an extract of ume that contains 0.6-1 wt% amino acids (asparagine being the major part), the sugars fructose, glucose and sucrose, and citric acid."

The Examiner referred specifically to the abstract on page 232 of the journal article and Tables 4 and 6 on page 234 of the journal article. Nakamura's composition disclosed alpha amino acids but also included beta and gamma amino acids. The mixture of amino acids at 0.6-1 wt% (corrected to 0.5-0.9 wt% as per Table 4 for only alpha amino acids as disclosed in the present application) is significantly below the quantities required to be an effective bait of 2-7 g/ml (which, as correctly noted by the Examiner are nearly identical to 2-7 wt%), as presented in claim 3 which was not rejected as being anticipated by Nakamura et al. Further concentration of the ume could not achieve the desired concentration range of 2-7 g/ml, as Table 4 indicates that a 15 fold concentration of ume juice leads to a change in the proportions of the various amino acids. Some amino acids, such as aspartic acid, were reported to increase in quantity more than 15 fold during the concentration from 15 g of the fresh juice to 1 g of extract, but the majority of amino acids displayed a significantly reduced quantity from the anticipated 15 fold increase when concentrating 15 g of the fresh juice to 1 g of extract. The most critical component of the plurality of alpha amino acids of the present invention, asparagine, reduced to less than 20% of the amount one

would anticipate for the 15 fold concentration of the juice that was described in Nakamura et al. achieving only a concentration of 0.47g/100ml (40.5 micromol/g). This is below the effective range discovered by the inventors of the present invention. This implies that a non-anticipatable degradation or condensation, to a poly(amino acid) or protein, or, as suggested in the abstract, the condensation between a sugar and an amino acid, known as the Maillard reaction, must have accompanied the "boiling down" process to achieve the ume extract. The "boiling down" is expected to degrade a mixture of organic acids, amino acids, and sugars.

Applicants describe, at page 8 lines 3-13, a method to eliminate microorganisms in the composition. Heating of the mixture is carried out, but only heating to 60 to 70°C for 30 minutes. Temperatures at which a mixture such as the ume extract would boil would exceed 100 °C. The use of higher temperatures for sterilization requires that the amino acids be decontaminated by microfiltration and the sugars be sterilized by heating in an autoclave before combining them into the composition that constitute the bait. The degradation of the amino acid composition that is evident in Nakamura et al. teaches away from the desired concentration range claimed in the present application. Hence, claim 1 and dependent claims 4-7 are not anticipated by Nakamura et al.

The bait formulation of the invention provides a composition that is an excellent bait for ants, in particular the white-footed ant. Ants communicate with other members of their colony through complex compositions produced by a number of glands. The bait must excite the glands to emit those pheromones which promote the trail to the bait. The object of an effective bait is to cause the greatest amount of recruitment. It is typical that two baits, which may have the exact same ingredients but in different proportions, can provide significantly different recruitment results. Furthermore, for a bait to be effective it must be attractive to the ant relative to the other compounds in the ant's environment. Nakamura et al. is not enabling to one of ordinary skill in the

art of insect baits since, as can be seen in Table 3, the ume extract, after diluted with 50 mL of water, exhibits a pH of 2.85. The ume extract would be far from an effective bait, possibly a repellant, due to its very acidic nature. Again Nakamura et al. does not teach a composition of an insect bait and never indicates that it is to be used as an insect bait.

Claims 1, 3-6 were rejected under 35 U.S.C. 102(b) as being anticipated by Soller et al. (US 6,223,365). The Examiner wrote:

"Soller et al. explicitly disclose a liquid insect bait, which contains 10-20% corn syrup, 5-15% sucrose (total of 15-35% corn syrup + sucrose), 1-10% protein, and 0.001-0.2% preservative (column 4, lines 3-14). Inclusion of amino acids is taught (column 4, lines 13-14). In the absence of further claim requirements, it is the Examiner's interpretation that Soller's protein is within the scope of applicant's "plurality of amino acids" since proteins contain plurality of amino acids. The claimed 2-7 wt/v% is clearly met by Soller's 1-10% protein. Further, Soller et al. explicitly disclose 35% corn syrup + sucrose, so the sugar concentration feature is met."

Soller et al. does not disclose the desirability of the amino acid aspargine and claim 2 was not rejected by the Examiner as being anticipated by Soller et al. The interpretation that 1-10% protein was equivalent to 2-7% amino acid is not appropriate in the context of an insect bait. The statement of the Examiner that "*the Examiner's interpretation that Soller's protein is within the scope of applicant's "plurality of amino acids" since proteins contain plurality of amino acids*", does not meet the requirements of MPEP 2112 and MPEP 2112 IV, copied below, as there is no basis to conclude that they are inherently equivalent:

MPEP 2112 Requirements of Rejection Based on Inherency; Burden of Proof [R-2] The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness."

MPEP 2112 IV. <EXAMINER MUST PROVIDE RATIONALE OR EVIDENCE TENDING TO SHOW INHERENCY The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a

given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted)

The equivalency of a protein and a mixture of amino acids is not inherent to the disclosure of Soller et al. The structure and nature of a protein or any polypeptide containing repeating units derived from amino acids are dramatically different from those of a mixture of the free amino acid.

The range for the amino acid asparagine was incorporated into claim 1, which was disclosed previously in the Detailed Description of the Invention (page 5 lines 26-7) and as such does not constitute new matter. The modifier "free" was placed before the words amino acids in Claim 1 to clarify the distinction over amino acids that have been incorporated by reaction into other molecules. Applicants use the name of specific amino acids which are proper names for the free amino acids and as such the inclusion of the word free in Claim 1 to avoid misinterpretation of the meaning of amino acids does not constitute new matter.

An amino acid residue in a protein and the parent amino acid differ in their formula weight by the formula weight of water, 18.02, and the properties of each amino acid residue are not independent of the protein. Molecular weights of known proteins range from 6,000 to more than 41,000,000 while the molecular weights of the free amino acids of the application vary from 75 to 153. In solid state and solution the amino acids are zwitterionic with two ionic groups of complimentary charge per molecule for most amino acids. Proteins have, to a first approximation, no ionic groups per repeating unit. Furthermore, proteins are not necessarily a single polypeptide but can also be multiple polypeptides associated with each other and even associated with inorganic atoms such as zinc or iron. Although the amino acids from a protein may be available to an insect after ingestion and digestion, a hydrolysis process which adds water to release the repeating unit from the polypeptide as free amino acids, and maybe equivalent as a food, the

properties needed of an attractant or bait that are inherent in an amino acid are not inherent in a protein.

Soller et al. did not intend that protein and amino acids were synonymous as it specifically states protein (column 4 lines 7 and 8) and subsequently states that amino acids can be included (column 4 line 13) in a mixture that includes 1 to 10% protein. There is no statement that free amino acids can be substituted for the protein. The statement that amino acids can be included does not teach the range of effective concentration, which amino acids are effective, nor that amino acids could be substituted for the protein. This would require, at a minimum, extensive experimentation to attempt to determine the efficacy of removing the protein and to define the effective amino acids and the effective range of concentrations. Soller et al., therefore, do not teach or suggest the use of amino acids at 2-7% to provide a superior insect bait. Applicant's invention is therefore patentable over Soller et al.

Claims 2, 7 and 14-19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Soller et al. in view of Derwent abstract 1977-44395Y and The Merck Index. The Examiner wrote:

"Soller et al. disclose a liquid insect bait, which contains 10-20% corn syrup, 5-15% sucrose (total of 15-35% corn syrup + sucrose), 1-10% protein, and 0.001-0.2% preservative (column 4, lines 3-14). Inclusion of amino acids is taught (column 4, lines 13-14). Derwent abstract 1977-44395Y teaches that an amino acid mixture that includes asparagine is used in combination with sugar to attract ants. The Merck Index discloses the well-known fact that sodium benzoate is a food preservative. The difference between the claimed invention and Soller et al. is that Soller et al. do not explicitly disclose including asparagine in their insect bait. However, one having ordinary skill in the art would have been motivated to select asparagine as one of the desirable amino acids to include in Soller's bait (useful against ants), because asparagine has been taught to be useful in ant baits. As for sodium benzoate, its selection as the preservative in Soller's food-type bait against ants would have been obvious to the ordinary skilled artisan because (i) Soller et al. require the use of a preservative, and (ii) The Merck Index establishes the well-known food preservative use of sodium benzoate. With respect to the percentage of the amino acids and sugars, Soller's 35% corn syrup + sucrose clearly teaches the claimed sugar concentration; and as discussed above, which discussion is incorporated herein by reference, Soller's 1-10% protein discloses and fairly suggests plurality of amino acids at 2-7 w/v%. Therefore, the claimed invention as a whole, would have been prima facie obvious to one of ordinary skill in the art at the

time the invention was made, because every element of the invention and the claimed invention as a whole have been fairly suggested by the teachings of the cited references.

Although Soller et al. permits the addition of a amino acid to the base composition including 1-10% protein, it does not teach the equivalency of amino acids and proteins as an insect bait as described above. Therefore the combination of Soller et al. with Derwent Abstract 1977-44395Y does not render the invention obvious. Additionally, the attractant of the Derwent Abstract 1977-44395Y is not claimed to be asparagine or any other amino acid, but is rather a "substance produced by heating an aqueous solution of amino acids and sugar at <180 degrees C" to give a "product" that has "a paste-like appearance", something inconsistent with the liquid bait described by Soller et al. and that described in the present invention. As in the example of Nakamura et al., heating the mixture of sugars and amino acids probably leads to a change in their concentration in an unpredictable manner, and if the Maillard reaction was believed to cause the loss of amino acids in Nakamura et al. the relatively severe heating in the Derwent Abstract would lead one skilled in the art to anticipate greater loss of the amino acids under the conditions of the Derwent Abstract. Such a vigorous heating was avoided by the Applicants as it would degrade the composition and render it ineffective as an ant bait. There is nothing stated in the Derwent Abstract 1977-44395Y that indicates that any free amino acid is present nor any indication of the presence of asparagine, nor is there a disclosure of any amino acid concentration. Hence it is not possible to combine a reference that does not define which or how much of any amino acid, if any, with a reference that does not claim the use of an amino acid as an attractant, to reach a conclusion that the invention is obvious to one skilled in the art.

The statement that "*one having ordinary skill in the art would have been motivated to select asparagine as one of the desirable amino acids to include in Soller's bait (useful against ants), because asparagine has been taught to be useful in ant baits*" is not correct. A search of the U.S. Patent Full-Text and Image Database does not give a single hit for a search of the key words

ant bait and asparagine nor insect bait and asparagine. Applicant has not found, and the Examiner has not cited, any literature that indicates the usefulness of asparagine as a component of an insect bait.

The Merck Index correctly defines sodium benzoate as a preservative, but since Soller et al. do not define the amino acids or their concentrations, the determination that the invention of the application is obvious is not justified since Soller et al do not teach the use of amino acids in the concentration range of the invention.

Applicants have made every effort to present claims which distinguish over the cited art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview (direct line (561) 671-3656) would expedite the prosecution of the application to an allowance. Although no fee is believed to be due, the Commissioner for Patents is hereby authorized to charge any deficiency in fees due or credit an excess in fees with the filing of the papers submitted herein during prosecution of this application to Deposit Account No. 50-0951.

Respectfully submitted,

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